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L1 4091 (SAM OR (SELF-ASSEMB?)) AND (DNA OR OLIGONUCL? OR OLIGOMER OR PROBE OR PRIMER)

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=> s 11 and (dna and (self      emblled monolayer))

L2      139 L1 AND (DNA AND (SELF ASSEMBLED MONOLAYER))

=> s 12 and conductiv?

L3      6 L2 AND CONDUCTIV?

=> dup rem 13

PROCESSING COMPLETED FOR L3
L4      4 DUP REM L3 (2 DUPLICATES REMOVED)

=> d 14 bib ab 1-4

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L4 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2000 ACS
AN 1999:723217 CAPLUS
DN 131:347448
TI Electronic detection of nucleic acids using metallocene-modified capture
probes on **self-assembled monolayers**
IN Bamdad, Cynthia; Yu, Changyun
PA Clinical Micro Sensors, USA
SO PCT Int. Appl., 164 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 4

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9957319	A1	19991111	WO 1999-US1703	19990127
	W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM		
	RW:	GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG		
AU 9924735	A1	19991123	AU 1999-24735	19990127
PRAI US 1998-PV84425		19980506		
US 1998-PV84509		19980506		
US 1998-135183		19980817		
WO 1999-US1703		19990127		

AB The present invention is directed to the electronic detection of nucleic acids using **self-assembled monolayers**. Electrodes are provided comprising a monolayer comprising **conductive oligomers** and a capture **probe**; the compns. further comprise a label **probe** comprising a first portion that is capable of hybridizing to a component of an assay complex, and a second portion comprising a recruitment linker that does not hybridize to a component of an assay complex and comprises at least one covalently attached electron transfer moiety such as a metallocene or more specifically ferrocene. The target sequence is attached to the electrode by direct or indirect hybridization to the capture **probe** and detecting electron transfer between said electron transfer moiety and the electrode. Amplifier **probes** and/or capture extender **probes** may also be used. Syntheses of deoxyribonucleotide triphosphates with covalently labeled electron transfer moieties such as ferrocene are also described.

L4 ANSWER 2 OF 4 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 1999:432167 SCISEARCH
GA The Genuine Article (R) Number: 201RY
TI Enzyme-linked amplified electrochemical sensing of **oligonucleotide**-**DNA** interactions by means of the precipitation of an insoluble product and using impedance spectroscopy

AU. Patolsky F; Katz E; Barnea A; Willner I (Reprint)
CS HEBREW UNIV JERUSALEM, INST CHEM, IL-91904 JERUSALEM, ISRAEL (Reprint);
HEBREW UNIV JERUSALEM, INST CHEM, IL-91904 JERUSALEM, ISRAEL
CYA ISRAEL
SO LANGMUIR, (25 MAY 1999) Vol. 15, No. 11, pp. 3703-3706.
Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036.
ISSN: 0743-7463.
DT Letter; Journal
FS PHYS
LA English
REC Reference Count: 28
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
AB A novel method for the sensitive and specific electrochemical analysis of **DNA** is described using Faradaic impedance spectroscopy. A thiol-thymine-tagged **oligonucleotide** (1) capable of forming only one double-stranded turn with the target **DNA** analyte (2) is assembled on a Au electrode and acts as the sensing interface. The resulting functionalized electrode is reacted with a complex between the target **DNA** (2) and a biotinylated **oligonucleotide** (3) to yield a bifunctional double-stranded assembly on the electrode support. The Faradaic impedance spectra, using $\text{Fe}(\text{CN})_6^{4-}/^{3-}$ as redox **probe**, reveal an increase in the electron-transfer resistance at the electrode surface upon the construction of the double-stranded assembly. This is attributed to the electrostatic repulsion of $\text{Fe}(\text{CN})_6^{4-}/^{3-}$ upon formation of the negatively charged double-stranded superstructure. Binding of an avidin-HRP conjugate to the **oligonucleotide-DNA** assembly further insulates the electrode and increases the interfacial electron-transfer resistance. The HRP-mediated biocatalyzed oxidation of 4-chloro-1-naphthol (4) by H_2O_2 yields a precipitate (5) on the **conductive** support and stimulates a very high barrier for interfacial electron transfer, $R_{\text{et}} = 14.7 \text{ k}\Omega$. Thus, the precipitation of 5 confirms and amplifies the sensing process of the target **DNA** (2). The analyte **DNA** (2) corresponds to the mutated gene fragment characteristic of the Tay-Sachs genetic disorder. The normal gene (2a) is easily discriminated by the sensing interface. The sensor device enables detection of the target **DNA** (2) with a sensitivity of at least $20 \times 10^{-9} \text{ g.mL}^{-1}$. Cyclic voltammetry experiments further confirm the formation of barriers for the interfacial electron transfer upon the buildup of the double-stranded **oligonucleotide-DNA** structure and upon the biocatalytic deposition of 5 on the electrode surface.

L4 ANSWER 3 OF 4 MEDLINE DUPLICATE 1
AN 97393485 MEDLINE
DN 97393485
TI Bioreactive **self-assembled monolayers** on hydrogen-passivated Si(111) as a new class of atomically flat substrates for biological scanning **probe** microscopy.
AU Wagner P; Nock S; Spudich J A; Volkmuth W D; Chu S; Cicero R L; Wade C P; Linford M R; Chidsey C E
CS Department of Biochemistry, Stanford University Medical Center, California 94305-5307, USA.. pwagner@stanford.edu
NC GM33289 (NIGMS)
SO JOURNAL OF STRUCTURAL BIOLOGY, (1997 Jul) 119 (2) 189-201.
Journal code: AUD. ISSN: 1047-8477.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199711
EW 19971103
AB This is the first report of bioreactive **self-assembled monolayers**, covalently bound to atomically flat silicon surfaces and capable of binding biomolecules for investigation by scanning **probe** microscopy and other surface-related assays and sensing devices. These monolayers are stable under a wide range of conditions and allow tailor-made functionalization for many purposes. We describe the substrate preparation and present an STM and SFM characterization, partly performed with multiwalled carbon nanotubes as tapping-mode supertips.

- Furthermore, we present two strategies of introducing *in situ* reactive headgroup functionalities. One method entails a free radical chlorosulfonation process with subsequent sulfonamide formation. A second method employs singlet carbenemediated hydrogen-carbon insertion of a heterobifunctional, amino-reactive trifluoromethyl-diazirinyl crosslinker. We believe that this new substrate is advantageous to others, because it (i) is atomically flat over large areas and can be prepared in a few hours with standard equipment, (ii) is stable under most conditions, (iii) can be modified to adjust a certain degree of reactivity and hydrophobicity, which allows physical adsorption or covalent crosslinking of the biological specimen, (iv) builds the bridge between semiconductor microfabrication and organic/biological molecular systems, and (v) is accessible to nanopatterning and applications requiring **conductive** substrates.

L4 ANSWER 4 OF 4 SCISEARCH COPYRIGHT 2000 ISI (R) DUPLICATE 2
 AN 96:870126 SCISEARCH
 GA The Genuine Article (R) Number: VT919
 TI Scanning **probe** microscopy of biomolecules and polymeric biomaterials
 AU Leggett G J; Davies M C (Reprint); Jackson D E; Tendler S J B
 CS UNIV NOTTINGHAM, DEPT PHARMACEUT SCI, LAB BIOPHYS & SURFACE ANAL, UNIV PK, NOTTINGHAM NG7 2RD, ENGLAND (Reprint); UNIV NOTTINGHAM, DEPT PHARMACEUT SCI, LAB BIOPHYS & SURFACE ANAL, NOTTINGHAM NG7 2RD, ENGLAND
 CYA ENGLAND
 SO JOURNAL OF ELECTRON SPECTROSCOPY AND RELATED PHENOMENA, (SEP 1996) Vol. 81, No. 3, pp. 249-268.
 Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
 ISSN: 0368-2048.
 DT Article; Journal
 FS PHYS
 LA English
 REC Reference Count: 44
 ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
 AB Critical problems associated with the analysis of biological macromolecules and polymeric biomaterials by scanning **probe** microscopy are identified. The problems of molecular immobilisation and distribution and data validation are discussed. A number of solutions are described, including the application of a **conductive** coating and the covalent attachment of biomolecules to suitable substrates. Recent work in the authors' laboratory is described. The **conductive** coating approach has been employed to study helical macromolecules (including polysaccharides and DNA) and protein molecules. A variety of covalent attachment procedures have been examined, including the adsorption of thiolated proteins onto gold surfaces, the coupling of proteins to **self-assembled monolayers**, and the attachment of biotinylated molecules to streptavidin-coated polystyrene surfaces. Studies of polymeric biomaterials are also described. Scanning tunnelling microscopy and transmission electron microscopy have been compared in studies of poly(ethylene oxide), and the interactions of ferritin with a ferritin antibody immobilised on a polystyrene surface have been examined.

=> d his

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FILE 'BIOSIS, MEDLINE, SCISEARCH, CAPLUS' ENTERED AT 10:12:14 ON 10 MAY 2000

L1 4091 S (SAM OR (SELF-ASSEMB?)) AND (DNA OR OLIGONUCL? OR OLIGOMER OR
 L2 139 S L1 AND (DNA AND (SELF ASSEMBLED MONOLAYER))
 L3 6 S L2 AND CONDUCTIV?
 L4 4 DUP REM L3 (2 DUPLICATES REMOVED)

=> s 11 and conductie monolayer

L5 . 0 L1 AND CONDUCTIVE MONOLAYER

=> s 11 and conductive monolayer

L6 0 L1 AND CONDUCTIVE MONOLAYER

=> s 11 and (conductive and monolayer)

L7 30 L1 AND (CONDUCTIVE AND MONOLAYER)

=> dup rem 17

PROCESSING COMPLETED FOR L7

L8 21 DUP REM L7 (9 DUPLICATES REMOVED)

=> s 18 not 13

L9 18 L8 NOT L3

=> d 19 bib ab 1-9

L9 ANSWER 1 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS

AN 1997:385492 BIOSIS

DN PREV199799684695

TI Bioreactive **self-assembled monolayers** on hydrogen-passivated Si(111) as a new class of atomically flat substrates for biological scanning **probe** microscopy.

AU Wagner, Peter (1); Nock, Steffen; Spudich, James A.; Volkmuth, Wayne D.; Chu, Steve; Cicero, Ronald L.; Wade, Christopher P.; Linford, Matthew R.; Chidsey, Christopher E. D.

CS (1) Dep. Biochem., Stanford Univ. Med. Cent., Stanford, CA 94305-5307 USA

SO Journal of Structural Biology, (1997) Vol. 119, No. 2, pp. 189-201.

ISSN: 1047-8477.

DT Article

LA English

AB This is the first report of bioreactive **self-assembled monolayers**, covalently bound to atomically flat silicon surfaces and capable of binding biomolecules for investigation by scanning **probe** microscopy and other surface-related assays and sensing devices. These **monolayers** are stable under a wide range of conditions and allow tailor-made functionalization for many purposes. We describe the substrate preparation and present an STM and SFM characterization, partly performed with multiwalled carbon nanotubes as tapping-mode supertips. Furthermore, we present two strategies of introducing *in situ* reactive headgroup functionalities. One method entails a free radical chlorosulfonation process with subsequent sulfonamide formation. A second method employs singlet carbene-mediated hydrogen-carbon insertion of a heterobifunctional, amino-reactive trifluoromethyldiazirinyl crosslinker. We believe that this new substrate is advantageous to others, because it (i) is atomically flat over large areas and can be prepared in a few hours with standard equipment, (ii) is stable under most conditions, (iii) can be modified to adjust a certain degree of reactivity and hydrophobicity, which allows physical adsorption or covalent crosslinking of the biological specimen, (iv) builds the bridge between semiconductor microfabrication and organic/biological molecular systems, and (v) is accessible to nanopatterning and applications requiring **conductive** substrates.

L9 ANSWER 2 OF 18 SCISEARCH COPYRIGHT 2000 ISI (R)

AN 1999:844441 SCISEARCH

GA The Genuine Article (R) Number: 250TB

TI **Self-assembled monolayers** as interfaces for organic opto-electronic devices

AU Zuppiroli L (Reprint); SiAhmed L; Kamaras K; Nuesch F; Bussac M N; Ades D; Siove A; Moons E; Gratzel M

CS ECOLE POLYTECH FED LAUSANNE, DEPT PHYS, LAB PHYS SOLIDES SEMICRISTALLINS, CH-1015 LAUSANNE, SWITZERLAND (Reprint); ECOLE POLYTECH, CTR PHYS THEOR, F-91128 PALAISEAU, FRANCE; UNIV PARIS 13, INST GALILEE, F-93430

VILLETAINEUSE, FRANCE; ECOLE POLYTECH FED LAUSANNE, DEPT CHIM, LAB PHOTON & INTERFACES, CH-1015 LAUSANNE, SWITZERLAND
CYA SWITZERLAND; FRANCE
SO EUROPEAN PHYSICAL JOURNAL B, (OCT 1999) Vol. 11, No. 3, pp. 505-512.
Publisher: SPRINGER VERLAG, 175 FIFTH AVE, NEW YORK, NY 10010.
ISSN: 1434-6028.
DT Article; Journal
FS PHYS
LA English
REC Reference Count: 29
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
AB Charge injection into an organic semiconductor can be improved by using a **self-assembled monolayer** of functionalized molecules grafted on the electrode. This new interface can be designed in order to reduce the Schottky barrier between the **conductive** electrode and the organic semiconductor. The polarizability of the molecules involved can also be chosen in order to increase the adhesion of the molecular semiconductor onto the electrode. We present Kelvin Probe experiments and saturated photovoltage measurements performed on a number of such derivatized electrodes. They permit a quantitative description of the potential shifts due to the **self-assembled monolayers** which are related to the electrical dipoles of the individual molecules constituting them. When conjugated sites contributing to the band states of the organic semiconductor are placed too close to the electrode in the negative part of the image-force potential, two new effects unfavorable to charge injection can appear. We demonstrate that it is convenient to separate the attachment group of the molecule from the conjugated core by a spacer of non-conjugated sites in order to reduce these undesirable effects.

L9 ANSWER 3 OF 18 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 1999:773997 SCISEARCH
GA The Genuine Article (R) Number: 241XE
TI Scanning **probe** lithography for electrode surface modification
AU Sugimura H (Reprint); Takai O; Nakagiri N
CS NAGOYA UNIV, GRAD SCH ENGN, DEPT MAT PROC ENGN, NAGOYA, AICHI 4648603,
JAPAN (Reprint); NIKON INC, R&D DEPT 1, R&D HEADQUARTERS, TOKYO 1408601,
JAPAN
CYA JAPAN
SO JOURNAL OF ELECTROANALYTICAL CHEMISTRY, (8 SEP 1999) Vol. 473, No. 1-2,
pp. 230-234.
Publisher: ELSEVIER SCIENCE SA, PO BOX 564, 1001 LAUSANNE, SWITZERLAND.
ISSN: 0022-0728.

DT Article; Journal
FS PHYS
LA English
REC Reference Count: 22
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
AB Application of scanning **probe** microscopy (SPM) to a nanometer-scale lithographic tool is demonstrated. An organosilane **monolayer** composed of octadecylsilyl [CH₃(CH₂)₁₇Si=] groups was prepared by chemical vapor deposition and served as a resist material for scanning **probe** lithography. Using an atomic force microscope (AFM) with an electrically **conductive probe**, the **monolayer** deposited on a Si substrate was patterned by flowing current through the AFM-**probe** \ **monolayer** junction. The pattern thus fabricated on the **monolayer** was transferred to the substrate Si by chemical etching in an aqueous solution of NH₄F and H₂O₂. The etching proceeded area-selectively in the regions where the **probe** had passed, since, in these regions, the **monolayer** had been degraded electrochemically. Furthermore, we have developed a nanofabrication method that uses the patterned organosilane **monolayer** as a template for pattern transfer to a Au nanostructure. The patterned organosilane **monolayer** was first etched in HF solution in order to expose the substrate Si in the **monolayer**-degraded region. The HF-etched sample was next treated in a Au electrode plating bath. In this plating, deposition of Au proceeded selectively on the exposed Si area while the surrounding undegraded **monolayer** surface remained free of deposits. The

- probe-scanned pattern transferred to a Au pattern through this area-selective electroplating. (C) 1999 Elsevier Science S.A. All rights reserved.

L9 ANSWER 4 OF 18 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 1999:653946 SCISEARCH
GA The Genuine Article (R) Number: 227LW
TI Multilayer resist films applicable to nanopatterning of insulating substrates based on current-injecting scanning **probe** lithography
AU Sugimura H (Reprint); Takai O; Nakagiri N
CS NAGOYA UNIV, GRAD SCH ENGN, DEPT MAT PROC ENGN, NAGOYA, AICHI 4648603, JAPAN (Reprint); NIKON INC, R&D HEADQUARTERS, R&D DEPT 1, TOKYO 1408601, JAPAN
CYA JAPAN
SO JOURNAL OF VACUUM SCIENCE & TECHNOLOGY B, (JUL-AUG 1999) Vol. 17, No. 4, pp. 1605-1608.
Publisher: AMER INST PHYSICS, CIRCULATION FULFILLMENT DIV, 500 SUNNYSIDE BLVD, WOODBURY, NY 11797-2999.
ISSN: 1071-1023.
DT Article; Journal
FS PHYS; ENGI
LA English
REC Reference Count: 24
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
AB Scanning **probe** lithography based on localized current injection using the **probe** tip of atomic force microscopy (AFM) has been applied to nanoprocessing of an insulating substrate. An electrically **conductive** resist film composed of triple layers was developed for this current-injecting AFM lithography. The bottom layer of the resist, which served as a current pass during patterning, consisted of amorphous silicon (a-Si) with 20 nm in thickness prepared by ion-beam sputtering. An organosilane **monolayer**, that is, octadecylsilyl **self-assembled monolayer** (ODS-SAM) of 2 nm in thickness, was used as the top layer of the resist, therefore, as the imaging layer in which nanoscale patterns were drawn by AFM. In order to bind the a-Si and the ODS-SAM together, the intermediate layer of the resist, that is, Si oxide of 2 nm in thickness, was prepared by photooxidation of the a-Si layer. Through an AFM-lithographic process using this multilayered resist, nanofabrication of fine grooves on a Si oxide substrate was demonstrated. The minimum feature size about 50 nm was successfully fabricated. (C) 1999 American Vacuum Society. [S0734-211X(99)02004-1].

L9 ANSWER 5 OF 18 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 1999:623162 SCISEARCH
GA The Genuine Article (R) Number: 224BW
TI Precipitation of an insoluble product on enzyme **monolayer** electrodes for biosensor applications: Characterization by faradaic impedance spectroscopy, cyclic voltammetry, and microgravimetric quartz crystal microbalance analyses
AU Patolsky F; Zayats M; Katz E; Willner I (Reprint)
CS HEBREW UNIV JERUSALEM, INST CHEM, IL-91904 JERUSALEM, ISRAEL (Reprint); HEBREW UNIV JERUSALEM, INST CHEM, IL-91904 JERUSALEM, ISRAEL
CYA ISRAEL
SO ANALYTICAL CHEMISTRY, (1 AUG 1999) Vol. 71, No. 15, pp. 3171-3180.
Publisher: AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036.
ISSN: 0003-2700.
DT Article; Journal
FS PHYS; LIFE
LA English
REC Reference Count: 70
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
AB Precipitation of an insoluble, insulating product on **monolayer**-functionalized electrodes enables the development of neu-electrochemical biosensors. Faradaic impedance spectroscopy and cyclic voltammetry are used to **probe** the electron transfer resistance at the **conductive** support upon the accumulation of the insoluble product on the electrode surface. Similarly, microgravimetric quartz crystal microbalance, QCM, analyses were used to assay the formation of the

precipitate on the electrode. A horseradish peroxidase, HPP, monolayer electrode is used to analyze H₂O₂ via the biocatalyzed oxidation of 4-chloro-1-naphthol (1) and the precipitation of the insoluble product (2). A bienzyme-layered electrode consisting of HRP and glucose oxidase, GOx, is used to sense glucose. Biocatalyzed oxidation of glucose by O₂, in the presence of GOx, yields H₂O₂, and the generated hydrogen peroxide effects the formation of the insoluble product (2) in the presence of HRP. The insoluble product accumulated on the electrode, and the extent of the resulting electron-transfer resistance, correlated with the amounts of H₂O₂ or glucose, and appropriate calibration curves are extracted.

L9 ANSWER 6 OF 18 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 1999:423315 SCISEARCH
GA The Genuine Article (R) Number: 200QV
TI Formation and evaluation of **self-assembled monolayers** derived from conjugated silylthiophene derivatives
AU Choi N (Reprint); Ishida T; Inoue A; Mizutani W; Tokumoto H
CS ANGSTROM TECHNOL PARTNERSHIP, JOINT RES CTR ATOM TECHNOL, 1-1-4 HIGASHI, IBARAKI, OSAKA 3050046, JAPAN (Reprint); NATL INST ADV INTERDISCIPLINARY RES, JRCAT, IBARAKI, OSAKA 3058562, JAPAN; ELECTROTECH LAB, IBARAKI, OSAKA 3058568, JAPAN
CYA JAPAN
SO APPLIED SURFACE SCIENCE, (APR 1999) Vol. 145, pp. 445-450.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 0169-4332.
DT Article; Journal
FS PHYS; ENGI
LA English
REC Reference Count: 28
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
AB We synthesized soluble rod-like silylthiophene, silylbithiophene, and silylquaterthiophene derivatives with various functional groups. Their **self-assembled monolayer** films on silicon oxide were evaluated by atomic force microscopy, X-ray photoelectron spectroscopy, water contact angle measurements, and fourier transform infrared-reflection absorption spectroscopy. We found that the molecular density (molecules/area) of the resultant films increased with thiophene moiety. This is probably due to the effective pi-stacking of aromatic rings between molecules. (C) 1999 Elsevier Science B.V. All rights reserved.

L9 ANSWER 7 OF 18 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 97:813108 SCISEARCH
GA The Genuine Article (R) Number: YD373
TI Photochemically-activated electrodes: application in design of reversible immunosensors and antibody patterned interfaces
AU Blonder R (Reprint); BenDov I; Dagan A; Willner I; Zisman E
CS HEBREW UNIV JERUSALEM, INST CHEM, IL-91904 JERUSALEM, ISRAEL (Reprint); HEBREW UNIV JERUSALEM, FARKAS CTR LIGHT INDUCED PROC, IL-91904 JERUSALEM, ISRAEL; SAVYON DIAGNOST LTD, IL-77101 ASHDOD, ISRAEL
CYA ISRAEL
SO BIOSENSORS & BIOELECTRONICS, (OCT 1997) Vol. 12, No. 7, pp. 627-644.
Publisher: ELSEVIER ADVANCED TECHNOLOGY, OXFORD FULFILLMENT CENTRE THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD, OXON, ENGLAND OX5 1GB.
ISSN: 0956-5663.
DT Article; Journal
FS AGRI
LA English
REC Reference Count: 47
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
AB Antigen **monolayers** assembled onto Au electrodes associated with a quartz crystal act as electrochemical or microgravimetric quartz-crystal-microbalance (QCM) sensing interfaces for the complementary antibody. Electrochemical analysis of the antibody (Ab) is based on the insulation of the antigen **monolayer** electrode by the associated Ab towards a redox probe in the electrolyte solution. Ferrocene-modified glucose oxidase (Fc-GOx) and glucose are employed as

redox probes for the amperometric transduction of the Ab association to the electrode. Bioelectrocatalyzed oxidation of glucose provides an electrochemical route to amplify the antigen-Ab complex formation. Electrochemical analysis of the dinitrophenyl antibody, DNP-Ab, by a dinitrophenyl-lysine monolayer electrode is presented. QCM analysis of the Ab is based on the frequency changes of the quartz crystal resulting from the association of the Ab to the crystal assembly. This method is discussed with the analysis of the fluorescein antibody, Fc-Ab, using a fluorescein monolayer-modified quartz crystal. A novel method to tailor reversible immunosensor devices by the application of photoisomerizable antigen monolayers on electrodes is presented. The antigen is modified by photoactive units exhibiting reversible photoisomerizable properties. In one photoisomer state, the antigen exhibits affinity for the Ab and enables its electrochemical or QCM analysis. Photoisomerization to the complementary state perturbs the antigen structure and the monolayer lacks affinity for the Ab. This enables the washing-off of the Ab and the regeneration of the actively sensing interface by a second illumination process that restores the antigen monolayer-modified surface. This method is exemplified by the development of a reversible DNP-Ab sensing electrode. N-Mercaptobutyl dinitrospiropyran was assembled as a photoisomerizable monolayer on a Au electrode. The dinitrospiropyran monolayer, SP-state, exhibits affinity for the DNP-Ab and enables the amperometric detection of the Ab using Fc-GOx and glucose as redox probe. The complementary photoisomerized protonated dinitromerocyanine monolayer, MRH+-state, lacks affinity for the DNP-Ab. By photoisomerization of the DNP-Ab associated with the SP-monolayer electrode to the MRH+-monolayer state, the DNP-Ab is washed-off, and by a second illumination process, the MRH+-monolayer is re-isomerized to the SP-monolayer assembly, which is the active interface for further analysis of the DNP-Ab. Cyclic amperometric detection of the DNP-Ab by the photoisomerizable dinitrospiropyran monolayer is demonstrated. The association of the DNP-Ab to the SP-monolayer electrode and the dissociation of the Ab from the MRH+-monolayer electrode are confirmed by QCM experiments using a dinitrospiropyran monolayer-modified quartz crystal.

The insulating features of an antigen-Ab complex on a conductive surface and the photochemically controlled association of an antibody to a photoisomerizable monolayer assembled onto the surface were used to develop means for micropatterning of surfaces by the antibody. A dinitrospiropyran antigen monolayer was assembled onto conductive ITO glass. A DNP-Ab solution was used as 'ink solution' to pattern the surface. The Ab-pattern was imaged by electrochemical copper deposition onto the Ab-lacking surface domains. The dinitrospiropyran monolayer assembled onto ITO or Pyrex glass surfaces was employed as an active interface for the photolithographic patterning of the surface with the DNP-Ab. Irradiation of the dinitrospiropyran monolayer, SP-state, through a grid-mask generated surface domains of protonated dinitromerocyanine, MRH+-state, which lacks affinity for the DNP-Ab. The DNP-Ab covalently-linked to agarose beads (50 μ m) was selectively associated to the SP-monolayer sites and the micro-pattern of the resulting antibody was imaged. Methods for employing this photolithographic patterning of DNP-Ab to generate microstructures of any biomaterial, and, specifically, neural networks, are discussed. (C) 1997 Elsevier Science Limited.

L9 ANSWER 8 OF 18 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 97:646510 SCISEARCH
GA The Genuine Article (R) Number: XT088
TI Scanning probe nanofabrication of chemically active areas on substrate covered with organosilane monolayers
AU Sugimura H (Reprint); Nakagiri N
CS NAGOYA UNIV, DEPT MAT PROC ENGN, CHIKUSA KU, NAGOYA, AICHI 46401, JAPAN
(Reprint); NIKON CO, TSUKUBA RES LAB, TSUKUBA, IBARAKI 30026, JAPAN
CYA JAPAN
SO JOURNAL OF VACUUM SCIENCE & TECHNOLOGY B, (JUL-AUG 1997) Vol. 15, No. 4,
pp. 1394-1397.
Publisher: AMER INST PHYSICS, CIRCULATION FULFILLMENT DIV, 500 SUNNYSIDE

BLVD, WOODBURY, NY 11797-2999.

DT Article; Journal

FS PHYS; ENGI

LA English

REC Reference Count: 25

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB An organosilane **monolayer self-assembled**

onto Si substrates was patterned using a scanning tunneling microscope or an atomic force microscope with a **conductive probe**.

The tip-scanned area was etched by wet etching, while the unscanned area remained resistant to the etching. Consequently, the tip-scanned patterns were transferred to the substrate Si using the scanned area as an etching window. Moreover, the tip-scanned area preferentially reacted with other organosilane molecules, e.g., 3-aminopropyltrimethoxysilane, to form a **monolayer** confined to the scanned pattern. Next, onto this amino-terminated **monolayer**, aldehyde-modified latex nanoparticles were immobilized area selectively through chemical reaction between the amino and aldehyde groups. It was demonstrated that in the areas where the **probe** tip of the microscopes had been scanned, the surface was terminated with hydroxyl groups and became active to various chemical treatments. (C) 1997 American Vacuum Society.

L9 ANSWER 9 OF 18 SCISEARCH COPYRIGHT 2000 ISI (R)

AN 97:354309 SCISEARCH

GA The Genuine Article (R) Number: WX055

TI Nanofabrication with proximal **probes**

AU Snow E S (Reprint); Campbell P M; Perkins F K

CS USN, RES LAB, DIV ELECT SCI & TECHNOL, WASHINGTON, DC 20375 (Reprint)

CYA USA

SO PROCEEDINGS OF THE IEEE, (APR 1997) Vol. 85, No. 4, pp. 601-611.

Publisher: IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC, 345 E 47TH ST, NEW YORK, NY 10017-2394.

ISSN: 0018-9219.

DT Article; Journal

FS ENGI

LA English

REC Reference Count: 85

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB In this paper we describe the use of proximal **probes**, such as the atomic force microscope (AFM) and the scanning tunneling microscope (STM), for nanofabrication. A resistless proximal **probe**-based lithographic technique has been developed that uses the local electric field of an STM or **conductive** AFM tip that is operated in air to selectively oxidize regions of a sample surface. The resulting oxide, typically 1-10 nm thick, can be used either as a mask for selective etching or to directly modify device properties by patterning insulating oxides on thin conducting layers. In addition to this resistless approach, we also describe the use of the STM/AFM to modify the chemical functionality of **self-assembling monolayer** films. Such modified films are used as a template for the selective electroless plating of metal films. The above processes are fast, simple to perform, and well suited for device fabrication. We apply the anodic oxidation process to the fabrication of both semiconductor and metal-oxide devices. In these latter structures, sub-10 nm-sized device features are easily achieved, and we describe the fabrication of the smallest possible device, a single, atomic-sized metallic paint contact by using *in situ*-controlled AFM oxidation.

=> d 19 bib ab 10-18

L9 ANSWER 10 OF 18 SCISEARCH COPYRIGHT 2000 ISI (R)

AN 96:566371 SCISEARCH

GA The Genuine Article (R) Number: UZ277

TI ELECTROCHEMISTRY OF SURFACE-CONFINED MIXED MONOLAYERS OF 4-AMINOTHIOPHENOL AND THIOPHENOL ON Au

AU HAYES W A; SHANNON C (Reprint)

CS AUBURN UNIV, DEPT CHEM, AUBURN, AL, 36849 (Reprint); AUBURN UNIV, DEPT

CHEM, AUBURN, AL, 36849
CYA USA
SO LANGMUIR, (24 JUL 1996) Vol. 12, No. 15, pp. 3688-3694.
ISSN: 0743-7463.
DT Article; Journal
FS PHYS
LA ENGLISH
REC Reference Count: 78

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We report the electrochemistry of surface-confined **monolayers** of 4-aminothiophenol (4-ATP) and mixed **monolayers** of 4-ATP and thiophenol (TP) on Au surfaces. Cyclic voltammograms of the 4-ATP **monolayer** in acidic aqueous perchlorate solutions are characterized by an irreversible oxidative wave at 0.730 V vs Ag/AgCl on the first scan and, upon scan reversal, by a persistent, reversible, surface-confined wave centered at approximately 0.500 V and a transient peak at about 0.300 V. We propose an ECE mechanism to account for this electrochemistry. 4-ATP is first oxidized to the cation radical, followed by chemical coupling to form an adsorbed dimer. The dimer is subsequently hydrolyzed in the presence of H₂O to yield an adsorbed quinone species that is reversible electroactive. Grazing angle FTIR spectroscopy was used to identify the product. The transient peak is due to the coupling of desorbed molecules and is consistent with the formation of a phenazine species. We then show that mixed **monolayers** of 4-ATP and TP can be used to study the coverage dependence of surface-confined reactions. The chemical composition of the mixed systems was determined using two independent Auger electron spectroscopic techniques and grazing angle FTIR spectroscopy. Using 20 min assembly times, we find that the surface concentration of 4-ATP is directly proportional to its mole fraction in solution. Interestingly, TP does not participate in the 4-ATP electrochemistry and functions only to dilute the surface concentration of 4-ATP. We find that the efficiency of the conversion of 4-ATP to product is somewhat higher at low mole fractions of 4-ATP.

L9 ANSWER 11 OF 18 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 93:194086 SCISEARCH
GA The Genuine Article (R) Number: KU388
TI SCANNING PROBE LITHOGRAPHY .1. SCANNING TUNNELING MICROSCOPE
INDUCED LITHOGRAPHY OF **SELF-ASSEMBLED** N-ALKANETHIOL
MONOLAYER RESISTS
AU ROSS C B; SUN L; CROOKS R M (Reprint)
CS UNIV NEW MEXICO, DEPT CHEM, ALBUQUERQUE, NM, 87131
CYA USA
SO LANGMUIR, (MAR 1993) Vol. 9, No. 3, pp. 632-636.
ISSN: 0743-7463.
DT Letter; Journal
FS PHYS
LA ENGLISH
REC Reference Count: 38
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
AB The tip of a scanning tunneling microscope was used to fabricate geometrically well-defined structures within organized, **self-assembled monolayer** resists that have critical dimensions ranging from 60 nm to 5 μ m. To achieve nanometer-scale lithography, a Au(111) substrate was coated with a **self-assembled monolayer** of HS(CH₂)₁₇CH₃, which functions as an ultrathin (approximately 2.5 nm) resist, and then the resist was etched by an STM tip. This treatment results in windowlike features that penetrate the organic **monolayer**. Nanolithographically defined features have been characterized by scanning tunneling microscopy, scanning electron microscopy, and electrochemical methods. For example, since mass and electron transfer to the **conductive** Au substrate are blocked by the **monolayer** everywhere except in the STM-etched regions, the windows serve as ultramicroelectrodes. The limiting current that results from radial diffusion of a bulk-phase redox species to the etched window is in close agreement with that predicted by theory.

L9 ANSWER 12 OF 18 CAPLUS COPYRIGHT 2000 ACS
AN 1999:723215 CAPLUS

DN. 131:348747
 TI Electronic methods for the detection of analytes utilizing **self-assembled monolayers** having **conductive oligomers** and capture binding ligands
 IN Bamdad, Cynthia; Yu, Changjun
 PA Clinical Micro Sensors, Inc., USA
 SO PCT Int. Appl., 143 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9957317	A1	19991111	WO 1999-US10104	19990506
				W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG	
	AU 9940725	A1	19991123	AU 1999-40725	19990506
PRAI	US 1998-PV84509		19980506		
	US 1998-PV84652		19980506		
	US 1998-135183		19980817		
	WO 1999-US10104		19990506		
AB	The present invention relates to the use of self-assembled monolayers with mixts. of conductive oligomers and insulators to detect target analytes. The following were prep'd.: adenosine modified with ferrocene at the 2' position, a branched adenosine, adenosine with ferrocene attached via a phosphate, ethylene glycol-terminated wire, uridine attached to an insulator, and an electrode contg. capture nucleic acids contg. conductive oligomers and insulators. Electrodes having linker-attached capture oligonucleotide probes , conductive oligomers and insulators were tested.				
L9	ANSWER 13 OF 18 CAPLUS COPYRIGHT 2000 ACS				
AN	1999:143846 CAPLUS				
TI	Polymerization reactions in two dimensions-tethered monolayers				
AU	McCarley, Robin L.; Schomburg, K. Cory; Noble, Charles O., IV; Peanasky, John S.; Willicut, Robert J.				
CS	Department of Chemistry, Louisiana State University, Baton Rouge, LA, 70803-1804, USA				
SO	Book of Abstracts, 217th ACS National Meeting, Anaheim, Calif., March 21-25 (1999), ANYL-010 Publisher: American Chemical Society, Washington, D. C.				
	CODEN: 67GHA6				
DT	Conference; Meeting Abstract				
LA	English				
AB	Polymns. in organized media (micelles, vesicles, Langmuir-Blodgett films) have received considerable attention due to their possible use in a variety of applications, such as drug release studies and capillary electrophoresis sepn. of chiral neutrals. Recently, polymns. in self-assembled monolayers , particularly those involving alkanethiol monolayers , have become the focus of several studies. We have an interest in such layers due to their possible use in the formation of electronically conductive nanostructures or in the stabilization of monolayer films toward aggressive environmental conditions. Knowledge about the conditions necessary to form polymeric or oligomeric materials from tethered monomers is required in order for such applications to be successful. This presentation will describe our recent electrochem., surface IR, and scanning probe microscopy investigations of aniline-contg. alkanethiol monolayers and, if time permits, work directed at understanding polymn. reactions on curved surfaces.				

L9. ANSWER 14 OF 18 CAPLUS COPYRIGHT 2000 ACS

AN 1999:8197 CAPLUS

DN 130:49510

TI Electronic methods for the detection of analytes

IN O'Connor, Stephen D.; Kayyem, Jon F.; Meade, Thomas J.

PA Clinical Micro Sensors, Inc., USA

SO PCT Int. Appl., 66 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9857159	A1	19981217	WO 1998-US12430	19980612
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9879678	A1	19981230	AU 1998-79678	19980612
	EP 988534	A1	20000329	EP 1998-930238	19980612
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRAI US 1997-49489 19970612

WO 1998-US12430 19980612

AB The present invention is directed to the detection of target analytes, such as biomols., using electronic techniques, particularly AC techniques. The invention also provides the app. for the detection of analyte in a test sample, comprising self-assembled monolayers and at least one metal ion ligand or chelate covalently attached to the electrode via a conductive oligomer.

L9 ANSWER 15 OF 18 CAPLUS COPYRIGHT 2000 ACS

AN 1998:197670 CAPLUS

DN 128:254896

TI Multi-array, multi-specific electrochemiluminescent testing

IN Wohlstadter, Jacob N.; Wilbur, James; Sigal, George; Martin, Mark; Guo, Liang-Hong; Fischer, Alan; Leland, Jon; Billadeau, Mark A.; Helms, Larry R.; Darvari, Ramin

PA Meso Scale Technologies, LLC, USA

SO PCT Int. Appl., 288 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9812539	A1	19980326	WO 1997-US16942	19970917
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9746495	A1	19980414	AU 1997-46495	19970917
	EP 944820	A1	19990929	EP 1997-945249	19970917
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRAI US 1996-715163 19960917

WO 1997-US16942 19970917

AB Materials and methods are provided for producing patterned multi-array, multi-sp. surfaces for use in diagnostics. The invention provides for electrochemiluminescence methods for detecting or measuring an analyte of interest. It also provides for novel electrodes for ECL assays.

- Materials and methods are provided for the chem. and/or phys. control of conducting domains and agent deposition for use multipurpose specific testing procedures.

L9 ANSWER 16 OF 18 CAPLUS COPYRIGHT 2000 ACS
AN 1998:178405 CAPLUS
DN 128:224219
TI A nano-fabrication technology based on cluster chemistry. Applications for single-electron electronics
AU Sato, Toshihiko
CS Cent. Res. Lab., Hitachi, Ltd., Kokubunji, 185-0014, Japan
SO Nippon Butsuri Gakkaishi (1998), 53(3), 165-169
CODEN: NBGSAW; ISSN: 0029-0181
PB Physical Society of Japan
DT Journal; General Review
LA Japanese
AB A review on with 12 refs. The single-electron element electronics used clusters. If a size of metal or semiconductor has the order of from several to several tens nm, the idea of the single-electron element is real sized. For this, chem. synthesis of such cluster is expected. U. Kreibig et. al. made composite films of the Schmid cluster (Au55-, Cl-, P-, and (C₆H₅)₃-, diam. .apprx.1.4 nm) by the impregnation of polystyrene matrix. Comparing with a composite film of Au colloidal particles (diam. .apprx.20 nm) with polystyrene matrix impregnated, it was ascertained that the Schmid cluster showed a larger decrease of elec. cond. at low temp. with a large Coulomb blockade effect. C. Schonenberger et al. showed the Coulomb charging effect by STM of Pd colloidal particles, where they used a substrate, a barrier, Pd colloid, a gap as a barrier, and STM probe as a double tunneled junction. E. S. Soldatov et al. used Carboran (1,7-(CH₃)₂-1,2-C₂B₁₀H₉Tl(OCOCF₃)₂) cluster mols. as islands, which were dipped into stearic acid LB film. The STM probe tip, the cluster mols. in the LB film, a graphite substrate, a layer of alumina insulator, and a gate electrode made a system for the single electron element path. In this case the coulomb staircase was obsd. at room temp. In these expts. the islands are covered with adsorbed org. mol. layers, which shows that the covered layers work as electron tunneling barrier and the barrier should be high (.apprx.100 kT = 3 eV) and enoughly thin (.apprx.2 nm at .apprx.1 V bias elec. voltage and .apprx.1 nA tunneling current). M. Korgi et al. made a junction constructed with STM with Pt tip, Au cluster, a barrier, and Au(111) thin film substrate, and, as the barrier a,a'-xylyldithio SAM (self-assembling monolayer) film was used. The thickness of the SAM film was 0.83 nm. The Au clusters were made by rapid cooling of aerosol of adiabatically expanded Au vapor and have cryst. surface, mainly of [111]. The obsd. I-V characteristics agreed with the simulation curve and the tunned resistance value of a,a'-xylydithiol SAM film was obtained. D. L. Klein et al. made a gap of 5 nm in the plane-wiring pattern of Au on the SiO₂ substrate and, in the small gap, Au colloid particles of 5 nm diam. were fixed with 1,6-hexanedithiol. In the I-V curve of this system, the Coulomb staircase was obsd. Controlling the covering of the Au particles, one dimensional or 2 dimensional structure of Au particles were automatically obtained. A transistor (single electron transistor) made with 3 Au-fine-particles was prep'd. and its I-V curve was obsd. at 4.2 K. As the island, Au, Pd, or Pt colloid, or CdS or CdSe can be used. The semiconductor fine particles make the quantum dots. As the barrier layer, instead of -SH of 1,6-hexanedithiol, -NH₂, -NC etc. can be used. Silane coupler, too, can be used. For the elec. contact to the fine particle, a nanometer scale Pt-tweezers with 4 nm gap was prep'd. by A. Bezryadin et al. These tweezers made possible a self-limiting process. By the cluster-chem., the way to make the nanometer scale single electron elements is beginning.

L9 ANSWER 17 OF 18 CAPLUS COPYRIGHT 2000 ACS
AN 1995:1005630 CAPLUS
DN 124:57517
TI Self-assembled conducting polymer monolayers
of poly(3-octylthiophene) on gold electrodes
AU Gao, Zhiqiang; Siow, Kok Siong; Chan, Hardy Sze On
CS Department of Chemistry, National University of Singapore, Kent Ridge,

SO Singapore, 0511, Singapore
Synth. Met. (1995), 75, 5-10
CODEN: SYMEDZ; ISSN: 0379-6779
DT Journal
LA English
AB Conducting polymer **monolayers** of poly(3-octylthiophene) (POT) on gold electrodes were prep'd. by a **self-assembly** technique. IR spectroscopic, ellipsometric and contact angle goniometric measurements indicate a highly organized and densely packed supermol. structure on the gold surface. Upon chem. doping in an aq. soln., the **monolayer** shows a dramatic change in voltammetric responses towards the redox **probe** in the soln. The **self-assembled** conducting polymer films exhibit better thermal stability in wet environments, suggesting that multi-anchoring effects of the polymer improve the integrated adhesion and the binding stability of the **self-assembled** POT **monolayers**. The **monolayers** were also characterized by electrochem. techniques.

L9 ANSWER 18 OF 18 CAPLUS COPYRIGHT 2000 ACS
AN 1995:8640 CAPLUS
DN 122:20274
TI Scanning **probe** lithography. 1. Scanning tunneling microscope-induced lithography of **self-assembled** n-alkanethiol **monolayer** resists
AU Ross, C. B.; Sun, L.; Crooks, R. M.
CS Dep. Chem., New Mexico Univ., Albuquerque, NM, USA
SO Report (1993), TR-5; Order No. AD-A263130, 27 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1993, 93(15), Abstr. No. 343, 917
DT Report
LA English
AB The tip of a scanning tunneling microscope was used to fabricate geometrically well structures within organized, **self-assembled** **monolayer** resist that have crit. dimensions ranging from 60 nm to 5 .mu.m. To achieve nanometer-scale lithog., a Au(111) substrate was coated with a **self-assembled** **monolayer** of HS(CH₂)₁₇CH₃, which functions as an ultrathin (approx. 25 nm) resist and then the resist was etched by an STM tip. This treatment results in window-like features that penetrate the org. **monolayer**. Nanolithog. defined features have been characterized by scanning tunneling microscopy, SEM, and electrochem. methods. For example, since mass and electron transfer to the **conductive** Au substrate are blocked by the **monolayer** everywhere except in the STM-etched regions, the windows serve as ultramicroelectrodes. The limiting current that results from radial diffusion of a bulk-phase redox species to the etched window is in close agreement with that predicted by theory.

=> d his

(FILE 'HOME' ENTERED AT 10:11:59 ON 10 MAY 2000)

FILE 'BIOSIS, MEDLINE, SCISEARCH, CAPLUS' ENTERED AT 10:12:14 ON 10 MAY 2000

L1 4091 S (SAM OR (SELF-ASSEMB?)) AND (DNA OR OLIGONUCL? OR OLIGOMER OR
L2 139 S L1 AND (DNA AND (SELF ASSEMBLED MONOLAYER))
L3 6 S L2 AND CONDUCTIV?
L4 4 DUP REM L3 (2 DUPLICATES REMOVED)
L5 0 S L1 AND CONDUCTIVE MONOLAYER
L6 0 S L1 AND CONDUCTIVE MONOLAYER
L7 30 S L1 AND (CONDUCTIVE AND MONOLAYER)
L8 21 DUP REM L7 (9 DUPLICATES REMOVED)
L9 18 S L8 NOT L3

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PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2

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NEWS 3 Feb 1 Addition of Machine-Translated Abstracts to CAplus
NEWS 4 Feb 28 Patent Information Now Searchable in CAOLD
NEWS 5 Mar 20 INPADOC: PRODUCER WARNING ABOUT DATA DELAYS
NEWS 6 Mar 22 NEW FEATURES IN INPADOC - RANGE SEARCHING AND NEW SDI/UPDATE SEARCH FIELD
NEWS 7 May 1 Beilstein Abstracts on STN - FILE BABS
NEWS 8 May 1 RN CROSSOVER AND ANSWER SIZE LIMITS INCREASED
NEWS 9 May 1 AIDSLINE has been reloaded
NEWS 10 May 1 Searching Y2-K compliant Patent Numbers
NEWS 11 May 9 Sequence Similarity Batch Search in DGENE

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FULL ESTIMATED COST	0.30	0.30

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FILE 'SCISEARCH' ENTERED AT 11:14:38 ON 10 MAY 2000
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=> s conductive self-assembled monolay?

L1 0 CONDUCTIVE SELF-ASSEMBLED MONOLAY?

=> s conductive oligomer

L2 37 CONDUCTIVE OLIGOMER

=> s l2 and (sam or self assembled monola?)

L3 3 L2 AND (SAM OR SELF ASSEMBLED MONOLA?)

=> dup rem 13

PROCESSING COMPLETED FOR L3

L4 3 DUP REM L3 (0 DUPLICATES REMOVED)

=> d 14 bib ab 1-3

L4 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2000 ACS
AN 1999:723217 CAPLUS
DN 131:347448
TI Electronic detection of nucleic acids using metallocene-modified capture probes on **self-assembled monolayers**
IN Bammad, Cynthia; Yu, Changyun
PA Clinical Micro Sensors, USA
SO PCT Int. Appl., 164 pp.
CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9957319	A1	19991111	WO 1999-US1703	19990127
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	AU 9924735	A1	19991123	AU 1999-24735	19990127

PRAI US 1998-PV84425 19980506

US 1998-PV84509 19980506

US 1998-135183 19980817

WO 1999-US1703 19990127

AB The present invention is directed to the electronic detection of nucleic acids using **self-assembled monolayers**.

Electrodes are provided comprising a monolayer comprising **conductive oligomers** and a capture probe; the compns.

further comprise a label probe comprising a first portion that is capable of hybridizing to a component of an assay complex, and a second portion comprising a recruitment linker that does not hybridize to a component of an assay complex and comprises at lease one covalently attached electron transfer moiety such as a metallocene or more specifically ferrocene. The target sequence is attached to the electrode by direct or indirect hybridization to the capture probe and detecting electron transfer between said electron transfer moiety and the electrode. Amplifier probes and/or capture extender probes may also be used. Syntheses of deoxyribonucleotide triphosphates with covalently labeled electron transfer moieties such as ferrocene are also described.

L4 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2000 ACS

AN 1999:723215 CAPLUS

DN 131:348747

TI Electronic methods for the detection of analytes utilizing **self-assembled monolayers** having **conductive oligomers** and capture binding ligands

IN Bammad, Cynthia; Yu, Changjun

PA Clinical Micro Sensors, Inc., USA

SO PCT Int. Appl., 143 pp

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9957317	A1	19991111	WO 1999-US10104	19990506
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

AU 9940725 A1 19991123 AU 1999-40725 19990506

PRAI US 1998-PV84509 19980506

US 1998-PV84652 19980506

US 1998-135183 19980817

WO 1999-US10104 19990506

AB The present invention relates to the use of **self-assembled monolayers** with mixts. of **conductive oligomers** and insulators to detect target analytes. The following were prep'd.: adenosine modified with ferrocene at the 2' position, a branched adenosine, adenosine with ferrocene attached via a phosphate, ethylene glycol-terminated wire, uridine attached to an insulator, and an electrode contg. capture nucleic acids contg. **conductive oligomers** and insulators. Electrodes having linker-attached capture oligonucleotide probes, **conductive oligomers** and insulators were tested.

L4 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2000 ACS

AN 1999:8197 CAPLUS

DN 130:49510

TI Electronic methods for the detection of analytes

IN O'Connor, Stephen D.; Kayyem, Jon F.; Meade, Thomas J.

PA Clinical Micro Sensors, Inc., USA

SO PCT Int. Appl., 66 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9857159	A1	19981217	WO 1998-US12430	19980612
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9879678	A1	19981230	AU 1998-79678	19980612
	EP 988534	A1	20000329	EP 1998-930238	19980612

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI

PRAI US 1997-49489 19970612

WO 1998-US12430 19980612

AB The present invention is directed to the detection of target analytes, such as biomols., using electronic techniques, particularly AC techniques. The invention also provides the app. for the detection of analyte in a test sample, comprising **self-assembled monolayers** and at least one metal ion ligand or chelate covalently attached to the electrode via a **conductive oligomer**.

=> s conductive monolay?

L5 2 CONDUCTIVE MONOLAY?

=> s 15 not 14

L6 2 L5 NOT L4

=> s 16 and (DNA or protein or enzyme or primer or probe)

L7 0 L6 AND (DNA OR PROTEIN OR ENZYME OR PRIMER OR PROBE)

=> d 15 bib ab 1-2

L5 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2000 ACS

AN 1989:636210 CAPLUS

DN 111:236210

TI Impedance spectroscopy. A dynamic tool for the design of corrosion inhibitors

AU Growcock, F. B.; Jasinski, R. J.

CS Dowell Schlumberger, Tulsa, OK, 74101, USA

SO ACS Symp. Ser. (1989), 396(Oil-Field Chem.), 636-50
CODEN: ACSMC8; ISSN: 0097-6156

DT Journal

LA English

AB The corrosion of steel in HCl, with and without inhibitors, show relatively straightforward impedance spectroscopy (IS) phenomenol. and can be represented by simple equiv. circuits of primarily passive elec. elements. Inductive effects are, apparently, a consequence of the measurement altering the surface being measured. IS reveals that during steel corrosion in hot concd. HCl, the heterogeneity of the surface is established rapidly and can be simulated with a single type of equiv. elec. circuit. Chemisorbing and electrostatic inhibitors in all cases reduce surface heterogeneity. At the same time, all of the inhibitors increase the charge-transfer resistance without producing a concomitant decrease in the interfacial capacitance. Time const. anal. suggests this arises from specific adsorption of the inhibitor to form insulating islands rather than uniform adsorption to give an electronically **conductive monolayer**. In some cases, polymn. of the inhibitor occurs subsequent to adsorption; this can lead to formation of a protective multilayer film atop the adsorbed monolayer, but, at the same time, result in significant loss of inhibitor in the soln.

L5 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2000 ACS

AN 1988:620419 CAPLUS

DN 109:220419

TI Synthesis of electrically conductive polypyrroles at the air-water interface of a Langmuir-Blodgett film balance

AU Hong, K.; Rubner, M. F.

CS Dep. Mater. Sci. Eng., Massachusetts Inst. Technol., Cambridge, MA, 02139, USA

SO Thin Solid Films (1988), 160, 187-95

CODEN: THSFAP; ISSN: 0040-6090

DT Journal

LA English

AB Elec. **conductive monolayers** of polypyrroles are synthesized at the air-water interface of a Langmuir-Blodgett film balance. This was accomplished by spreading a mixt. of pyrrole monomer and a surface-active pyrrole deriv. (3-octadecyl pyrrole) onto a subphase contg. an oxidizing aq. soln. of FeCl₃. The resultant elec. conductive films can be subsequently compressed into a condensed monolayer in which they exhibit the surface pressure-area characteristics of the 3-octadecyl pyrrole in a slightly expanded state. Neither the pyrrole nor the 3-octadecylpyrrole will react at the air-water interface to produce elec. conductive materials under the conditions used to polymerize the mixt. In other words, elec. **conductive monolayers** can only be produced from spreading solns. contg. both the surface-active pyrrole and pyrrole monomer. Preliminary IR anal. indicates that the newly formed

• polymer monolayer comprises both pyrrole and alkylpyrrole units.

=> d his

(FILE 'HOME' ENTERED AT 11:14:19 ON 10 MAY 2000)

FILE 'BIOSIS, CAPLUS, MEDLINE, SCISEARCH' ENTERED AT 11:14:38 ON 10 MAY
2000

L1 0 S CONDUCTIVE SELF-ASSEMBLED MONOLAY?
L2 37 S CONDUCTIVE OLIGOMER
L3 3 S L2 AND (SAM OR SELF ASSEMBLED MONOLA?)
L4 3 DUP REM L3 (0 DUPLICATES REMOVED)
L5 2 S CONDUCTIVE MONOLAY?
L6 2 S L5 NOT L4
L7 0 S L6 AND (DNA OR PROTEIN OR ENZYME OR PRIMER OR PROBE)